

I Claim:

1. A prosthesis to replace a cephalad portion of a left natural facet joint on a vertebral body and a cephalad portion of a right natural facet joint on the vertebral body, the prosthesis comprising

an integrated base member including left and right side regions and a mid-region joining the side regions without fixation of the mid-region to bone, to form the integrated base member,

a fixation area on at least one of the left and right side regions to accommodate fixation of the integrated base member to the vertebral body,

an artificial left facet joint structure on the left side region adapted and configured to replace a cephalad portion of the left natural facet joint, and

an artificial right facet joint structure on the right side region adapted and configured to replace a cephalad portion of the right natural facet joint.

2. A prosthesis according to claim 1 wherein the fixation area is located superior to the artificial facet joint structure to accommodate fixation of the integrated base member to the vertebral body at or near a pedicle.

3. A prosthesis according to claim 1 wherein the fixation area is located superior to the artificial facet joint structure to accommodate fixation of the integrated base member to a pedicle of the vertebral body.

4. A prosthesis according to claim 1 further including an auxiliary fixation area on the mid-region to accommodate fixation of the integrated base member to the vertebral body at or near a spinous process.

5. A prosthesis according to claim 1 further including an auxiliary fixation area

on the mid-region to accommodate fixation of the integrated base member to a spinous process of the vertebral body.

5 6. A prosthesis according to claim 1
 wherein at least one of the left and right artificial facet joint structures includes means for replacing a cephalad portion of a respective one of the left and right natural facet joints after removal of the cephalad portion of the respective natural facet joint
10 from the vertebral body.

 7. A prosthesis according to claim 1
 wherein the left and right artificial facet joint structures include means for replacing a cephalad portion of the left and right natural facet joints after
15 removal of the cephalad portion of the left and right natural facet joints from the vertebral body.

 8. A prosthesis according to claim 1
 further including a third artificial facet joint structure on one of the left and right side regions
20 superior to the respective artificial left or right facet joint structure adapted and configured to replace a caudal portion of a natural facet joint formed by a vertebral body.

 9. A prosthesis according to claim 8
25 wherein the third artificial facet joint structure includes means for replacing a caudal portion of a natural facet joint after removal of the caudal portion of the natural facet joint from the vertebral body.

30 10. A prosthesis according to claim 1
 wherein at least one of the left and right artificial facet joint structures includes means for replacing a cephalad portion of at least one of the left and right natural facet joints after removal of at least
35 one inferior articular process and at least a portion of

a lamina from the vertebral body.

11. A prosthesis according to claim 1
wherein the left and right artificial facet
joint structures include means for replacing a cephalad
5 portion of the left and right natural facet joints after
removal of left and right inferior articular processes
and at least a portion of a lamina from the vertebral
body.

12. A prosthesis according to claim 8
10 wherein the third artificial facet joint
structure includes means for replacing a caudal portion
of a natural facet joint after removal of at least a
portion of a mamillary process, or an accessory process,
or part of a transverse process, or part of a pedicle
15 from the vertebral body.

13. A method of replacing, on a vertebral
body, a cephalad portion of a left natural facet joint
and a cephalad portion of a right natural facet joint
using the prosthesis as defined in claim 1 to provide
20 improved support for the spinal column, the method
comprising the steps of

(i) removing the cephalad portions of the
left and right natural facet joints from the vertebral
body, and

25 (ii) after step (i), fixing the prosthesis as
defined in claim 1 to the vertebral body to replace both
removed cephalad portions of the first and second natural
facet joints with the first and second artificial facet
joint structures.

30 14. A method according to claim 13
wherein the removing step includes removing
left and right inferior articular processes and at least
a portion of a lamina from the vertebral body.

15. A prosthesis to replace a cephalad
35 portion of a natural facet joint on a vertebral body

comprising

a base member,

a fixation area on the base member to
accommodate fixation of the base member to the vertebral
5 body, and

an artificial facet joint structure on the
base member including means for replacing a cephalad
portion of a natural facet joint after removal of at
least a portion of an inferior articular processes and at
10 least a portion of a lamina from the vertebral body.

16. A prosthesis according to claim 15
wherein the fixation area is located superior
to the artificial facet joint structure to accommodate
fixation of the base member to the vertebral body at or
15 near a pedicle.

17. A prosthesis according to claim 15
wherein the fixation area is located superior
to the artificial facet joint structure to accommodate
fixation of the base member to a pedicle of the vertebral
20 body.

18. A prosthesis according to claim 15
further including an other artificial facet
joint structure on the base member superior to the first
defined artificial facet joint structure adapted and
25 configured to replace a caudal portion of a natural facet
joint on the vertebral body.

19. A prosthesis according to claim 18
wherein the other artificial facet joint
structure includes means for replacing a caudal portion
30 of a natural facet joint after removal of at least a
portion of the caudal portion of the natural facet joint
from the vertebral body.

20. A prosthesis according to claim 18
wherein the other artificial facet joint
35 structure includes means for replacing a caudal portion

of a natural facet joint after removal of at least a portion of a mamillary process, or an accessory process, or part of a transverse process, or part of a pedicle from the vertebral body.

5 21. A method of replacing, on a vertebral body, a cephalad portion of a natural facet joint using the prosthesis as defined in claim 15 to provide improved support for the spinal column, the method comprising the steps of

10 (i) removing the cephalad portion of the natural facet joint from the vertebral body, including removal of an inferior articular process and at least a portion of a lamina from the vertebral body, and

 (ii) after step (i), fixing the prosthesis as
15 defined in claim 15 to the vertebral body to replace the removed cephalad portion of the natural facet joint with the artificial facet joint structure.

 22. A prosthesis to replace a caudal portion of a natural facet joint on a vertebral body comprising
20 a stem member including a fixation area to accommodate fixation of the stem member to the vertebral body at or near a pedicle, and

 an artificial facet joint structure carried by the stem member adapted and configured to replace a
25 caudal portion of a natural facet joint.

 23. A prosthesis according to claim 22 wherein the fixation area accommodates fixation of the stem member to the vertebral body without fixation of the stem member to a lamina of the vertebral
30 body.

 24. A prosthesis to replace a caudal portion of a natural facet joint on a vertebral body comprising
 a screw member including a fixation area to accommodate fixation of the screw member to the vertebral
35 body at or near a pedicle, and

an artificial facet joint structure carried by the screw member adapted and configured to replace a caudal portion of a natural facet joint.

25. A prosthesis according to claim 24
5 wherein the fixation area accommodates fixation of the screw member to the vertebral body without fixation of the screw member to a lamina of the vertebral body.

26. A prosthesis according to claim 22 or 24
10 wherein the artificial facet joint structure includes means for replacing a caudal portion of a natural facet joint after removal of at least a portion of the caudal portion of the natural facet joint from the vertebral body.

27. A prosthesis according to claim 22 or 24
15 wherein the artificial facet joint structure includes means for replacing a caudal portion of a natural facet joint after removal of at least a portion of a mamillary process, or an accessory process, or part
20 of a transverse process, or part of a pedicle from the vertebral body.

28. A method of replacing, on a vertebral body, a caudal portion of a natural facet joint using the prosthesis as defined in claim 22 or 24 to provide
25 improved support for the spinal column, the method comprising the steps of

(i) removing the caudal portion of the natural facet joint from the vertebral body, and
(ii) after step (i), fixing the prosthesis as
30 defined in claim 22 or 24 to the vertebral body to replace the removed caudal portion of the natural facet joint with the artificial facet joint structure.

29. A method according to claim 25
wherein the removing step includes removing at
35 least a portion of a mamillary process, or an accessory

process, or part of a transverse process, or part of a pedicle from the vertebral body.

30. A prosthesis system to replace a cephalad portion and a caudal portion of a natural facet joint on
5 a vertebral body comprising

a first prosthesis as defined in claim 15 to replace a cephalad portion of the natural facet joint,

a second prosthesis as defined in claim 22 or
24 to replace a caudal portion of the natural facet
10 joint, and

the artificial facet joint structure of the first prosthesis being adapted and configured to articulate with the artificial facet joint structure of the second prosthesis to replace the cephalad and caudal
15 portions of the natural facet joint.

31. A prosthesis according to claim 1

wherein the fixation area accommodates fixation of the integrated base member to the vertebral body without fixation of the integrated base member to a
20 lamina of the vertebral body.